From: R6-IAU
To: Mason, Steve
Subject: FW: Arkema Documents
Date: Wednesday, August 30, 2017 5:01:03 PM
Attachments: image002.png
Crosby Facility Map Attachment A.docx
Crosby Raw Material SDS Attachment D
ATT00001.txt
Refrigerated Products in Reefers Attachment E.docx
Organic Peroxides Decomp Products Attachment B.docx
Overview.docx
Crosby Raws 082917 Attachment C.xlsx
Crosby Site Photo August 29, 2017.jpg

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Civil Engineer
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From: R6-IAU
Sent: Wednesday, August 30, 2017 4:43 PM
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Subject: FW: Arkema Documents

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From: Boesch, John
Sent: Tuesday, August 29, 2017 8:38 PM
To: R6-IAU
Subject: FW: Arkema Documents

From: Nelms, Jordan
Sent: Tuesday, August 29, 2017 6:02 PM
To: Lacey, Michael ; Boesch, John
Subject: Fwd: Arkema Documents

Jordan Nelms | Planning Section Chief | FEMA National IMAT East | 540-247-6292 | jordan.nelms@fema.dhs.gov

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From: "KEOUGH Michael" <mike.keough@arkema.com>
Date: Tuesday, August 29, 2017 at 17:31:23

To: "Sloan, Mark T. (HCOHSEM)" <mark.sloan@oem.hctx.net>, "Royall, Bob (Fire Marshal's Office)" <Bob.Royall@fmo.hctx.net>, "Cary, Richard" <richard.cary@HQ.DHS.GOV>, "Tullos, Lonnie (HCSO)" <Lonnie.Tullos@Sheriff.hctx.net>, "Nelms, Jordan" <jordan.nelms@fema.dhs.gov>, "Wade, David (HCOHSEM)" <David.Wade@oem.hctx.net>
Subject: Arkema Documents

Mike Keough
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ATTACHMENT A
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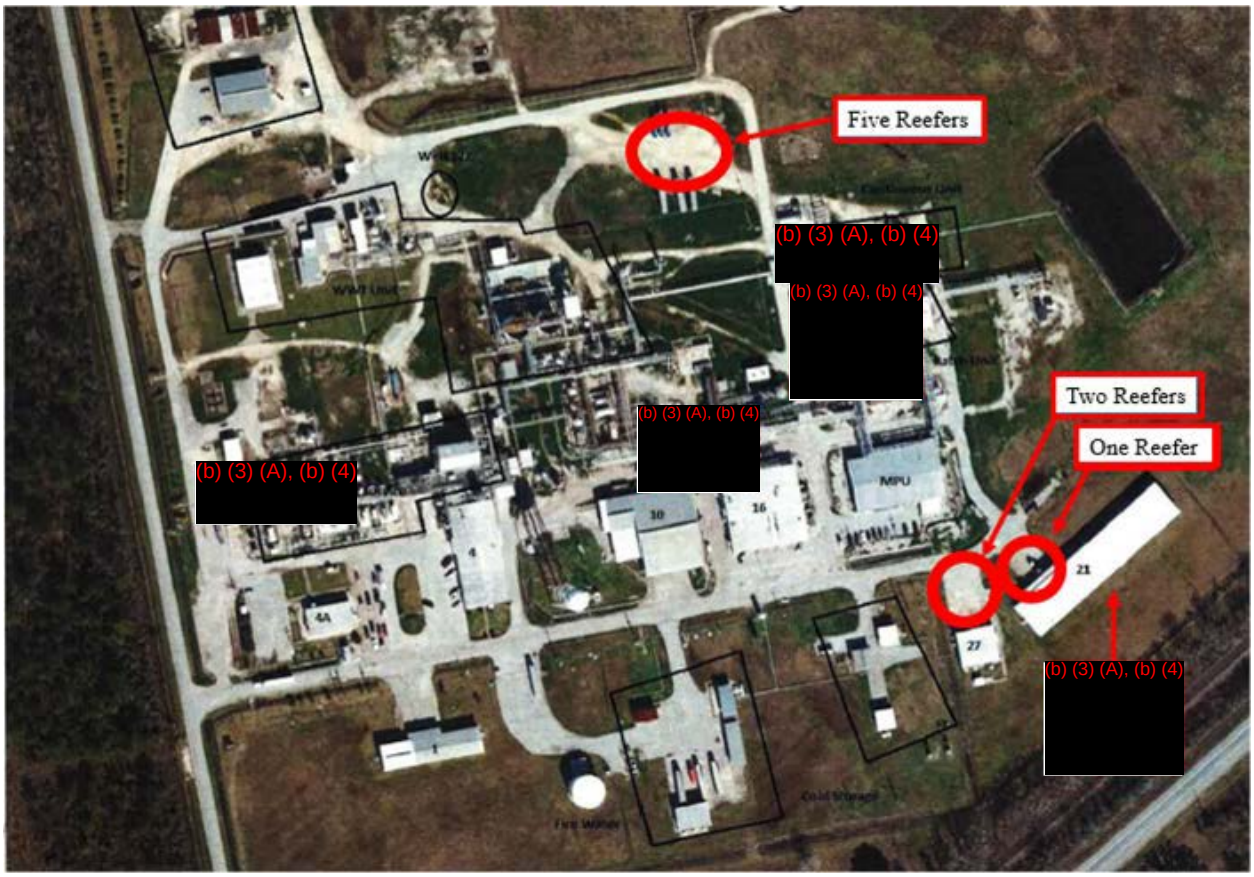

Matl #	Plnt	Material Desc	Loc	Batch #	Stock	#
8375	0007	2-ETHYLHEXANOYL CHLORIDE DISTILLED	[redacted]		Unrestricted	010
790	0007	ACETIC ACID 84%			Unrestricted	010
800	0007	ACETONE			Unrestricted	010
798	0007	AROMATIC 100			Unrestricted	010
808	0007	BENZOYL CHLORIDE			Unrestricted	010
815	0007	CAUSTIC POTASH 45%			Unrestricted	010
816	0007	CAUSTIC SODA 50%			Unrestricted	010
823	0007	CUMENE HYDROPEROXIDE			Val. GR Blk	070
823	0007	CUMENE HYDROPEROXIDE			Unrestricted	010
848	0007	DIMETHYL HEXADIENE			Unrestricted	010
840	0007	DIMETHYL HEXANEDIOL DH-S			Unrestricted	010
43505	0007	EPSOM SALTS			Unrestricted	010
872	0007	HEXANE			Unrestricted	010
877	0007	HYDROGEN PEROXIDE 70%			Unrestricted	010
802	0007	ISOAMYLENE			In Transit	070
802	0007	ISOAMYLENE			Unrestricted	010
879	0007	ISOBUTYLENE			Unrestricted	010
882	0007	ISOPROPYL ALCOHOL			Unrestricted	010
30960	0007	MINERAL OIL, WHITE			Unrestricted	010
899	0007	MINERAL SPIRITS ODORLESS			Unrestricted	010
945	0007	MONOSODIUM PHOSPHATE			Unrestricted	010
910	0007	NEODECANOYL CHLORIDE >=98.0% UNDISTILLED			Unrestricted	010
941	0007	PIVALOYL CHLORIDE 95-100%			Unrestricted	010
927	0007	PROPYLENE GLYCOL			Unrestricted	010
950	0007	SODIUM BICARBONATE			Unrestricted	010
949	0007	SODIUM CARBONATE ANHYDROUS LIGHT			Unrestricted	010
948	0007	SODIUM CHLORIDE			Unrestricted	010
955	0007	SODIUM SULFATE ANHYDROUS			Unrestricted	010
956	0007	SODIUM SULFITE ANHYDROUS			Unrestricted	010
958	0007	SULFUR DIOXIDE			Unrestricted	010
969	0007	SULFURIC ACID 93% REAGENT ACS			Unrestricted	010
985	0007	T-BUTYL HYDROPEROXIDE 70%			Unrestricted	010

Comment	Plant Name	Div	Division Name	PCtr	Profit Center	Product Hierarchy
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
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	CROSBY PLANT	01	Customer Division		Not available	999999999999999999
	CROSBY PLANT	01	Customer Division		Not available	999999999999999999

Prod Hierarchy Desc	ValCl	Batch Create	Quantity	UoM	Packaged Qty	Package UoM
Not available	3000		(b) (3) (A), (b) (4)		0.000	
Not available	3000				0.000	
Not available	3000				0.000	
Not available	3000				0.000	
Not available	3000				0.000	
Not available	3000				0.000	
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Not available	3000				0.000	
Not available	3000				0.000	
Not available	3000				0.000	
Not available	3000				0.000	
Not available	3000				0.000	


EVINRUDE

ATTACHMENT B

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Crosby Product Line	Major	Minor
Luperox 10, 10M75	(b) (4)	
Luperox 11M45, 11M75		
Luperox 188M75		
Luperox 256		

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Luperox 546M75, 546M75L	(b) (4)
Luperox 575, 575M75	
Luperox P	
Luperox 26, 26M50, 26M90	
Luperox 555M75	
Luperox DI	

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Luperox DTA	(b) (4)
Luperox 101, 101MO32, 101MO50	
t-Butyl Hydroperoxide	
t-Amyl Hydroperoxide	
Cumene Hydroperoxide	

Overview

The Arkema Crosby site is located at 18000 Crosby Eastgate Rd, Crosby, TX 77532. A map of the facility is attached (Attachment A). The facility produces liquid organic peroxides that are used primarily in the production of plastic resins, polystyrene, polyethylene, polypropylene, PVC and polyester reinforced fiberglass, and acrylic resins. There are 57 employees employed at the facility. The facility is in a rural area with no hospitals, schools, correctional facilities or recreational areas or industrial/commercial areas in the vicinity. There are limited residential homes in the immediate area.

Some organic peroxides are thermally unstable compounds and sensitive to heat. These organic peroxides will self-decompose, sometimes violently, when temperatures reach certain thresholds. To avoid self-decomposition, organic peroxides must be stored below the Self-Accelerating Decomposition Temperature (SADT). The SADT test establishes the lowest temperature at which a peroxide, in its largest commercial package, will undergo self-accelerating decomposition. The SADT has been measured for each organic peroxide and is included in each product's SDS in Section 9. In addition, organic peroxides are generally flammable and burn vigorously. The gasses formed from decomposition of the peroxide are also flammable and easily ignited. Decomposition products from organic peroxides identified in Attachment B.

Some organic peroxides manufactured at the Crosby plant must be stored under refrigeration due to low SADT (lower than general ambient temperatures).

The facility uses various raw materials such as sulfur dioxide, concentrated sulfuric acid, isobutylene, hydrogen peroxide, acid chlorides, caustic soda, potassium hydroxide, and hydroperoxides. A list of raw materials is attached. (Attachment C). Combustion products from these raw materials can include: sulfur oxides, hydrochloric acid, carbon oxides. The reaction between concentrated acids and bases may be highly exothermic. SDSs for the raw materials are attached (Attachment D). The reaction between concentrated acids and bases may be highly exothermic.

Emergency Response

In the event of a fire, water spray, dry chemical, or carbon dioxide may be used as extinguishing agents. Water is recommended for controlling and containing peroxide fires since it will provide better cooling, which will reduce the rate of peroxide decomposition. However, water will not extinguish an organic peroxide fire. Most organic peroxides are lighter than water and can burn on top of liquid surfaces.

Do not use a solid water stream as it may scatter and spread fire. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent) Closed containers of this material may explode when subjected to heat from surrounding fire. After a fire, wait until the material has cooled to room temperature before initiating clean-up activities. Fire fighting equipment should be thoroughly decontaminated after use.

General Health and Environmental Effects of Organic Peroxides

Organic peroxides can cause short term health effects, including skin irritation and may cause an allergic skin reaction. In addition, organic peroxides are corrosive to the eye. Short term exposures to organic peroxides do not generally pose chronic health hazards. See attached SDSs for refrigerated organic peroxides (Attachment E).

Current Situation

In preparation for Hurricane Harvey, on August 25, the Crosby plant shut down production and stabilized its operating units. This included ensuring that the refrigerated units containing cold temperature organic peroxides were functioning, that the emergency electrical generators were functioning, and that nitrogen was available as a back-up cooling agent. In addition, the facility established alternate storage (refrigerated reefers) in case of a power failure. Further, the plant took steps to ensure the backup generators and refrigerated reefers were topped off with diesel. Arrangements were made to acquire a backup supply of fuel to be delivered to the site. On August 26, non-essential personnel were told not to report to the site, and the designated storm ride-out crew was activated. At the same time, back-up fuel was delivered to the site.

On Sunday, the three cold-storage warehouses were taken out of service because the previously never experienced flood water caused the plant to lose electrical power and back-up generator power. Due to this loss of power, the cold storage products were moved into 8 reefers. The diesel powered reefers were located on the high ground within the plant.

By Monday, the facility experienced approximately 5-6 feet of water. (See Attachment F). At some point between Monday and Tuesday, the flooding reached the reefers and they began shutting down. At this point, the temperatures began to rise in the reefers due to failure of refrigeration.

Currently, the facility personnel have been evacuated. One reefer is wedged against an (b) (3) (A), (b) (4) Two of the reefers are located at the loading dock of Building 27; the remaining 5 reefers are located as identified in Attachment A.
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ATTACHMENT E

Refrigerated Organic Peroxides in Reefers

- LUPEROX 11M45
- LUPEROX 10M75
- LUPEROX 188M75 35# JERRICAN
- LUPEROX 11M75 35# JERRICAN
- LUPEROX 10
- LUPEROX 221
- LUPEROX 546M75